

understanding pea protein and new cover crop option?



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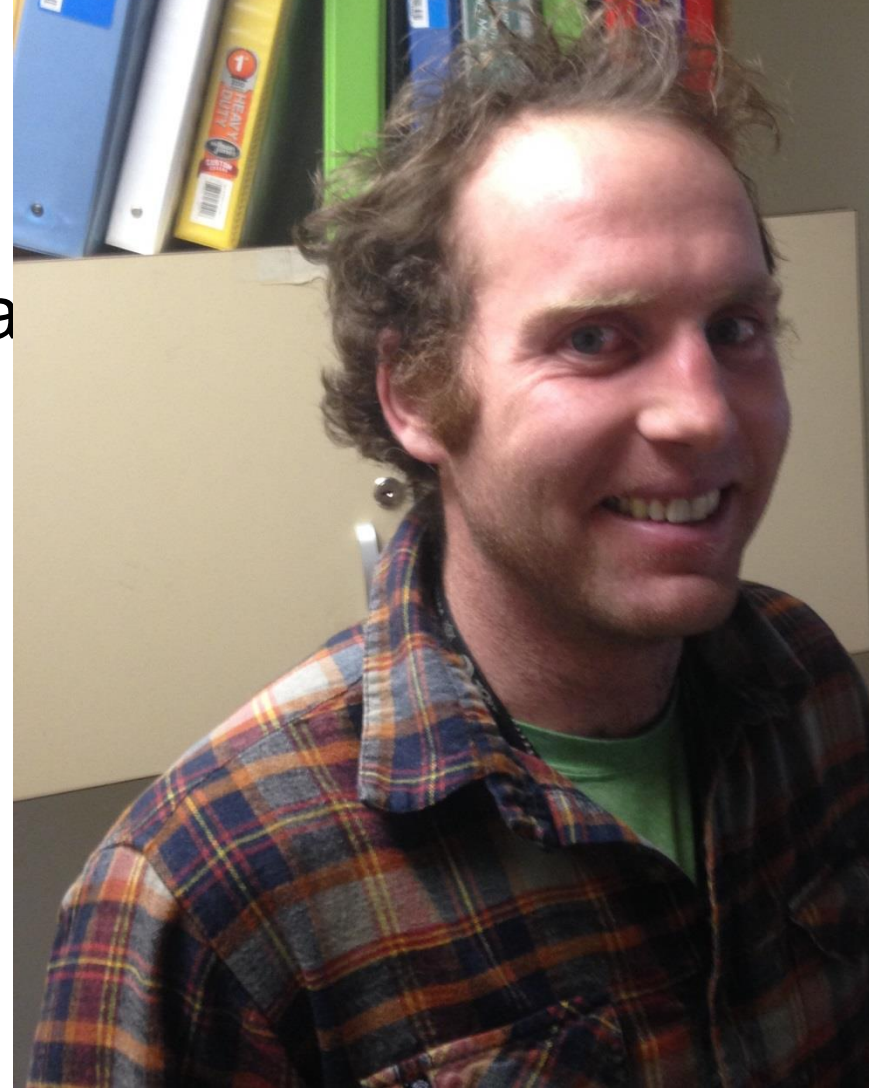
Dec 9, 2015 Great Falls, MT

Rationale for Pea Protein Study > “MREDI” 2015 State Legislative Funds

- 1) Protein fractionation market driving yellow pea prices in recent years
- 2) Pea protein a very little studied aspect (no economic reason to do so). If don't understand it, can't manage it. Bio N fix aspect may complicate things.
- 3) Pea protein concentration varies considerably (from 17 to 27%). Industry wants consistently high protein.
- 4) **Chen studied G x E relationship in pea protein from state-wide 2013 and 2014 pea variety trials and found E >>> G. Paper in revision.**
- 5) **Miller wants to study E x M of 1,000 actual farm field samples.**

Pea Protein study steps

- 1) Hire bright fellow to collect and analyze
- Mike Bestwick starts Jan 4, 2016



Pea Protein study steps

- 1) Hire bright fellow to collect and analyze data
- 2) Efficiently source 1,000 YELLOW pea samples from around Northern Plains
 - United Pulse / AGT is helping, potentially MDA also, direct-from-farmer samples?
 - Must be 'pinned to a field' to link to weather and soils databases

Pea Protein study steps

- 1) Hire bright fellow to collect and analyze data
- 2) Efficiently source 1,000 pea samples from around Northern Plains
- 3) Contact growers to query 'M' (management) info related to things that could affect protein
 - i.e. inoculant, fertility, seeding date, seed yield

Pea Protein study steps

- 1) Hire bright fellow to collect and analyze data
- 2) Efficiently source 1,000 pea samples from around Northern Plains
- 3) Contact growers to query 'M' (management) info related to things that could affect protein
- 4) Conduct wet lab analysis for protein on all samples
 - use data to compare accuracy of various NIR equations

Pea Protein study steps

- 1) Hire bright fellow to collect and analyze data
- 2) Efficiently source 1,000 pea samples from around Northern Plains
- 3) Contact growers to query 'M' (management) info related to things that could affect protein
- 4) Conduct wet lab analysis for protein on all samples
- 5) Conduct statistical analysis to relate protein to all gathered variables to measure predictive strengths among pea protein and weather / soil / management parameters

- in ~ 18 months to deadline!!

HELP!



Rationale for New Cover Crop Option

- 1) Preliminary research comparing plant 'functional groups' showed legumes most beneficial to subsequent wheat
 - in 2015 legumes actually reduced yields (and increased protein) at Conrad site due to more severe "haying off" under severe drought
- 2) Desire annual legume with greatest N fix potential in northern environments
 - Walley et al 2007 reviewed literature and found one species that was > pea
- 3) Desire stand-up legume to provide vertical canopy structure (increased WUE) and minimize seeder clogging
- 4) Desire small seed size, to reduce cost, with dark-skinned (i.e. tannins) seed coat for fungistatic properties

Answer?

Small-seeded fababean?

- 2012 obtained small-seeded fababean from U of Sask (SSNS-1) but it had yellow peas (~380 mg/seed)
 - Impressive nodulation and
- Obtained smallest seedling collection with help from M
 - 25 seeds per accession; ex



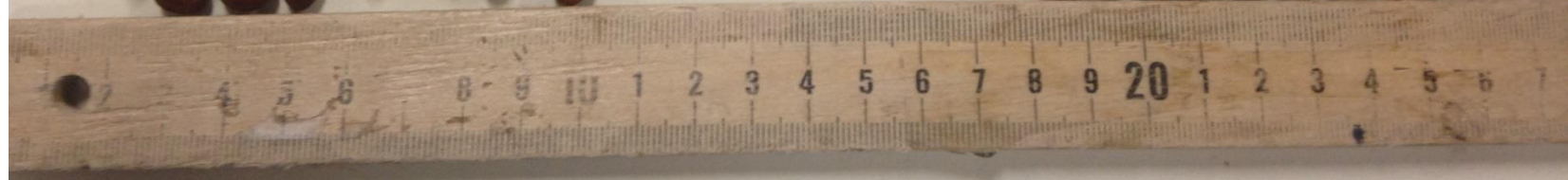
Black accession

SSNS-1

Single plant

SSNS-1

Petite tickbean (V. minima)



Questions?

